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Health Social Network Websites: Design Features and Users' Participation

Emergent Research Forum (ERF) Paper

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Abstract

Patients are increasingly utilizing health Social Network Sites (SNSs) to share useful health information and support with peers. The long-term viability of health SNSs depends critically on voluntary contributions by their members, which in turn relies on members' participation. Literature examined the drivers of users' participation in online communities and suggested that social identity plays important roles in determining virtual community members' participation and contribution to the community. However, little known regarding healthcare SNSs design features that facilitate users' social identity. With such knowledge, it could determine the most effective design features that motivate higher levels of participation, which in turn help creating a sustainable and effective health SNSs. In this study, we aim to bring the design and characteristics of health websites to the front via exploring how the design features of health SNSs shape and influence member's participation behavior.

Keywords

Design features, users' participation, social identity, empathic emotion, social support

Introduction

In the healthcare area, Social Networks Sites (SNSs) interventions as Health Behavioral Change Support Systems (HBCSSs) have a tremendous potential through their impact on members' health behavior change (Al-Ramahi and Park 2015; Al-Ramahi et al. 2016; Laranjo et al. 2014). Indeed, reflecting their vast potential in the healthcare domain, SNSs have emerged as an essential component of the healthcare industry in the last few years (HP 2013). SNSs enable patients to establish better relationships with peers to share health-related experiences and emotional support (Kordzadeh and Warren 2014). Susannah Fox notes "The most striking finding of the national survey is the extent of peer-to-peer help among people living with chronic conditions. One in four internet users living with high blood pressure, diabetes, heart conditions, lung conditions, cancer, or some other chronic ailment (23%) say they have gone online to find others with similar health concerns" (Fox 2011).

However, the long-term viability of health SNSs depends critically on voluntary contributions by their members, which in turn relies on members' participations. Previous literature examined the influence of social networks (e.g., Abu-Shanab and Al-Tarawneh 2015) and the drivers of users' participation in online communities and found that social identity as relational capital factor plays important roles in determining virtual community members' participation and contribution to the community (e.g., Huang et al. 2014). Ren et al. (2012) explore how particular technological designs (group identity- and personal bond-based features) affect member attachment and participation in an online community. However, to our knowledge, there has been little studies on healthcare SNSs design features that facilitate users' social identity. Healthcare SNS is qualitatively different from other SNS or online communities (such as a hobby community), and therefore we can expect and propose different mechanisms of technological designs and user participation. With such knowledge, it could determine the most effective design features that motivate higher levels of participation, which in turn help creating a sustainable and effective health SNSs.

To fill this gap in literature and to bring the design and characteristics of health websites to the front, this research seeks to explore how the design features of health SNSs shape and influence member's participation behavior. Specifically, we focus on specific design features that aid the formation of peer structure, which then enable social identity among the users. Since social identity may play an important role for chronic disease patients, but not much so for other patients, we focus on health websites for chronic diseases. More specifically, this study addresses the following research questions:

- RQ1: How specific design features associated with the health website may help enable social identity among the users (i.e. aid the formation of peer structure and group identity)?
- RQ2: How does the social relational capital represented by *perceived social identity*, *empathic emotion*, and *perceived social support* influence health SNS members' participation?

Theory and Hypotheses

Figure 1 depicts our conceptual model of the drivers of users' participation.

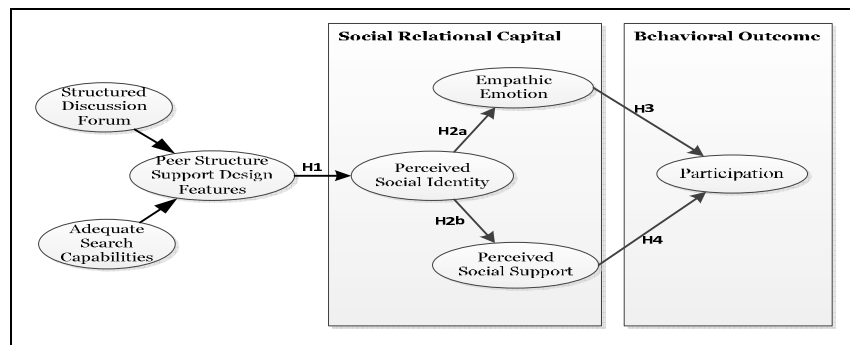


Figure 1: The conceptual model

Peer Structure Support Design Features (PSSDFs)

One of the main benefits of health SNSs is to let users regardless of their geographical locations to find peers with same medical status and/or health concerns to exchange social support and share health-related information (Kordzadeh et al. 2012; Laranjo et al. 2014). Such benefit forms the basis for a social structure's ability to attract and retain members (Butler 2001). Therefore, in this study, we focus on specific design features of healthcare SNS that aid the formation of peer structure and group identity. Such features are crucial for health websites to provide the capacity needed to support peers' social structure (Kane et al. 2014). Simply providing facilities for communication in SNSs does not guarantee a sustainable social structures that are able to continue providing benefits for members over the long term (Butler 2001). Instead, health SNSs providers should supplement their sites by methods or strategies that enable members to shape their groups based on the common medical conditions and health concerns (Kordzadeh et al. 2012). We refer to these methods or strategies that facilitate building peers social structures by *peer structure support design features (PSSDFs)* of health SNS. In this study, we focus on two components of PSSDFs, *structured discussion forum* and *adequate search capabilities*. Having a structured discussion forum based on disease types (i.e., Diabetes 1 or Diabetes 2) or stages (i.e., Cancer stage 1 or Cancer stage 2) as well as providing an appropriate searching capabilities to help users filter posts and members makes it easier to find other individuals in similar situations (Ridings and Gefen 2004).

By helping members shape their group and connect with individuals who have similar medical condition and health concern "*peers*", health SNS provides members with an online social identity where they can get a sense of belonging (Haslam et al. 2009). This identity supplies members with the appropriate context and relational structure which they are more likely to communicate effectively and exchange

support (Kordzadeh et al. 2012). For example, *Patientslikeme* website¹ delivers patients with effective and efficient ways to create their peer social group “patients like them” to share experience and support. Another example is *Tudiabetes* website², which is an online healthcare community for diabetes patients. In this website, the discussion forum is structured based on the diabetes type into categories such as “type 1 diabetes forum”, “type 2 diabetes forum”, and “general diabetes topics”. Such structure help members find others with same disease type and same conditions. Therefore, we hypothesize that the existence of *peer structure support design features (PSSDFs)* will increase the ability of individuals to identify those users with the same medical conditions and health concerns and communicate with them. This in turn will help members create their own peers group and therefore build their own social identity over the network.

Hypothesis 1: Existing appropriate methods and strategies to locate peers and create support network with them in health SNSs cause better user's perceived social health group identity

Social Identity

Perceived social identity can be defined as “one's knowledge that he belongs to a certain social group together with some emotional and value significance to [him] of this group membership” (Tajfel 1972, p. 31).

Perceived social identity and empathic emotion: Previous studies have found that social identity is associated with empathy (Preston and De Waal 2002). Empathic emotion can be defined as an individual's unique internal response, “feeling of sympathy, compassion, or tenderness,” resulting from the perception of a person in need and the adoption of that person's emotional state (Batson and Shaw 1991). Belonging to a group of people who have the same medical condition and health concerns helps individuals deeply comprehend others' feelings and discover their own health status (i.e., know what they are feeling and how they must feel) (Batson and Shaw 1991). Thus, observing a peer with a health need increases one's empathic emotion and motivation to help (Coke et al. 1978) and make a social contribution (Fichman et al. 2011).

Hypothesis 2a: *The perceived social identity gained through joining a group of peers in a health SNS is positively associated with an individual's empathic emotion.*

Perceived social identity and perceived social support: In their study, Haslam et al. (2009) present an evidence of the relationship between social identity and social support. An emotional support is more likely to arise in a place where individuals perceive a sense of social identity (Haslam et al. 2009). Joining a group is expected to be linked with social support due to the sense of belonging and affiliation it involves. In the context of healthcare, a positive correlation occurs between social identification and individuals' health due to social identification's association with support provided by in-group members (Haslam et al. 2009). In health SNSs, groups of peers in which members have similar medical conditions, interests, and concerns are more likely to work and communicate with each other effectively (Kordzadeh et al. 2012) and to trust the communicated recommendations (Qualman 2011). Moreover, they are more likely to exchange support messages such as “We feel with you” and “We are like you.” In this way, the members of the peer group tend to receive effective support. Thus, in health SNSs, individuals' perceived social identity resulting from their membership in the peer group is likely to be positively associated with their perceived social support.

Hypothesis 2b: *The perceived social identity derived from belonging to a peer group in health SNSs is positively associated with an individual's perceived social support.*

Empathic Emotion and Users' Participation

In literature, evidence has been presented that empathic emotion is an important motivator of helping (Batson et al. 1981; Coke et al. 1978). Coke et al. (1978) concluded that a vicarious physiological arousal emerges in a person when he or she observes another's distress; this state increases the person's motivation to reduce the distress and, subsequently, the willingness to introduce help. In the same vein,

¹ <http://www.patientslikeme.com/>

² <http://www.tudiabetes.org/>

empathic emotion evokes an altruistic motivation to see an individual's need reduced, through what is called the *empathy–altruism hypothesis* (Batson and Shaw 1991). In the context of health SNSs, the empathic emotion that emerges from witnessing an in-group member's health-related distress prompts not only helping behavior to relieve this distress, but also efforts to enhance the welfare of the member (Kleef et al. 2008). Consequently, observer-member's tendency to provide help and desire to see in-group members in a better situation would increase his/her willingness to disclose his/her own Personal Health Information (PHI) in hopes of reducing the distress, which in turn leads to higher level of participation.

Hypothesis 3: *An individual's empathic emotion towards in-group members in health SNSs is positively associated with the individual's contribution to the community.*

Perceived Social Support and Users' Participation

Perceived social support creates psychological ties that motivate users to both maintain relationships and to establish expectations of reciprocation (Chan and Li 2010). Individuals who perceive social support from other members are more likely to feel more like insiders than outsiders (Eisenberger et al. 1986), which should prompt a stronger norm of reciprocity. In health SNS, we argue that perceived social support may be related to participation because perceptions of social support affect an individual's general perception that an online community values him or her. This perception in turn may prompt the individual to reciprocate with increased participation (Moorman et al. 1998). Therefore, in health SNSs, we predict users' helping behavior toward others such as providing Personal Health Information (PHI) to reduce other's needs will be higher when emotional and informational social support is present. Users who enjoy perceived social support will tend to be more obligated to care about the community's welfare and, in turn, will be more likely to exhibit a higher level of participation in the community as a way for reciprocation.

Hypothesis 4: *An individual's perceived social support in health SNSs is positively correlated with the individual's participation.*

Proposed research method

Data collection

To assess our hypotheses, we collected discussion messages from online diabetes SNS (www.tudiabetes.org). It is an online peer-to-peer healthcare community funded by the Diabetes Hands Foundation aims at providing a platform for people who have diabetes to get in touch with others, help each other out, educate themselves and share the steps they take every day to stay healthy while living with this very serious and chronic disease. The messages were gathered using a Web crawler in the period from June 9, 2007 to Dec 8, 2014. The number of the discussion messages gathered is 52,532 (1,224 discussion threads).

Data analysis

To analyze the data collected and observing members' behavior on the SNS, we suppose to use text mining. This could be a straightforward to measure *perceived social identity* and *participation*. However, to measure *perceived social support* and *empathic emotion*, a subset of patients' messages need to be first manually analyzed and coded to train a classifier, which could be then used to automatically classify the remaining messages. To test hypotheses, we will use Structural Equation Modeling technique using SmartPLS.

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